

# Work Order ID 63373

Thursday, October 28, 2010 10:16:26 AM



Page 1

Item ID: D3690-1

Accept



Setup Start



Revision ID:

Stop



Item Name: Glareshield

Start Date: 10/28/2010 Start Qty: 2.00



Cust Item ID:

Required Date: 11/4/2010 Req'd Qty: 2.00



Customer:

Reference:

Approvals:

Process Plan:

*M*

Date:

*10-10-28*

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D3690	Rev <i>B</i> <i>10/11/16</i>

100 0.00



HAND FINISHING THERMOFORMING

Thermoform

Memo

0.00

Thermoforming Machine

Set up machine frame and program as per Folio FTA 019

*BB*  
*10/10/28*

110 0.00



HAND FINISHING THERMOFORMING

Thermoform

Memo

0.00

Thermoforming Machine

Cut Blanks to fit frame size 69.5" X 35.5"

*BB*  
*10/10/28*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Work Order ID 63373

Thursday, October 28, 2010 10:16:26 AM



Page 2

Item ID:	D3690-1	Accept		Setup	Start	
Revision ID:						
Item Name:	Glareshield				Stop	
Start Date:	10/28/2010	Start Qty: 2.00		Cust Item ID:		
Required Date:	11/4/2010	Req'd Qty: 2.00		Customer:		
Reference:						

Approvals:	Process Plan:	Date:	Tooling:	Date:	Run	Start	
	QC:	Date:	SPC (Y/N):	Date:		Stop	

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
115 	Dry Material	0.00							
HandThermo	Memo	0.00							
Hand Finishing Thermoforming	Dry Sheet as per QSI022 POLYCARBONATE								
	Temp: 240° F								BB 10/10/29
	Time IN: 4:00 PM 10/10/28								
	Time OUT: 7:10 AM 10/10/29								
120 	THERMOFORMING MACHINE	0.00							
Thermoform	Memo	0.00							X3 BB 10/10/29
Thermoforming Machine	Thermoform as per Dwg. D3690-1 and Folio FTA 019 □Dwg. Rev.								
	□ Folio Rev.								
130 	QC2- Inspect parts off machine FAI/FAIB	0.00							
QC	Memo	0.00							X2 BB 10/10/29
Quality Control	Visually inspect for proper formation of each part								PTO →

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector
10/10/2017	13						

Part No: D3190-1 PAR #: \_\_\_\_\_ Fault Category: Thermoforming NCR: Yes No DQA: [Signature] Date: 10/11/17  
 Resolution: Scrap Disposition: Scrap QA: N/C Closed: [Signature] Date: 10/11/17

NCR: <u>63373</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
10/10/2017	130	Material Too Hot. small webs. on FRONT CORNERS. R.C. PROCESS.	<u>[Signature]</u>	Scrap. & Replace. one part. Pull @ lower temp.	10/10/2017 Dh.	<u>8</u> 10/11/17	<u>[Signature]</u>	<u>[Signature]</u> 10/11/17

NOTE: Date & initial all entries

**Work Order ID 63373**

Thursday, October 28, 2010 10:16:26 AM

Page 3

Item ID: D3690-1

Accept

Revision ID:

Item Name: Glareshield

Start Date: 10/28/2010 Start Qty: 2.00

Required Date: 11/4/2010 Req'd Qty: 2.00

Reference:

Cust Item ID:

Customer:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run

Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

140

QC8- Inspect parts - second check

0.00



QC

Memo

0.00

Quality Control

(X2)

Dh  
10/10/10

150

HAND FINISHING THERMOFORMING

0.00



Thermoform

Memo

0.00

Thermoforming Machine

Trim to Finished Dimensions as per dwg D3690 using DT9036 / DT9043 template

(X2)

BB  
10/11/10

160

QC2- Inspect parts off machine FAI/FAIB

0.00



QC

Memo

0.00

Quality Control

Check dimensions to ensure conformity to drawing tolerances.

(X2)

BB  
10/11/10

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries

**Work Order ID 63373**

Thursday, October 28, 2010 10:16:26 AM

Page 4

Item ID: D3690-1

Accept

Revision ID:

Item Name: Glareshield

Start Date: 10/28/2010 Start Qty: 2.00

Required Date: 11/4/2010 Req'd Qty: 2.00

Reference:

Cust Item ID:

Customer:

Approvals:

Process Plan:

Date:

Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Run Start

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

170



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

8 10/11/12

0.00

Memo

(72)

180



Packaging

Packaging

Identify as per dwg &amp; Stock Location: GA

B 63352

0.00

0.00

Memo

= 7 m-l 10/11/16

(2x)

190



QC

Quality Control

QC21- Final Inspection - Work Order Release

0.00

0.00

Memo

ck 10/11/16  
MF  
10-11-16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries



# Picklist Print

Thursday, October 28, 2010 10:16:35 AM

Page 1

Work Order ID: 63373



Parent Item: D3690-1



Parent Item Name: Glareshield

Start Date: 10/28/2010

Required Date: 11/4/2010

Start Qty: 2.00

Required Qty: 2.00

Comments: IPP Rev A New Issue 08/04/28 DL verified by:DD  
 IPP Rev:B 08-07-14 revB as per dwg DD verified by:ec  
 IPP Rev:C 08-10-07 revC as per dwg DD verified by:EC Ipp Rev. D  
 Add Step 115 Dry Material 10/04/21 DL

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MLEXS.093-F6006-02		Purchased	No				sf	931.6350	26.31	52.64632			
GE PLASTICS LEXAN SHEET													

Location

Loc Qty

Loc Code

therm

931.635

931.635

110877

3

BR  
10/10/28

**Dart Aerospace Ltd**

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

DART AEROSPACE LTD		Work Order:	63373
Description: Glareshield		Part Number:	D3690-1
Inspection Dwg: D3690	Rev: B		Page 1 of 1

### FIRST ARTICLE INSPECTION CHECKLIST

☒ First Article ☐ Prototype

#### THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Shape Definition	✓			
Free of visual flaws (bumps, cracks, voids, etc.)	✓			

Measured by: <i>BB</i>	Date: 10/10/29
------------------------	----------------

#### TRIMMING SECTION

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
2.20	+/-0.030	2.193	✓			
3.55	+/-0.030	3.537	✓			
0.040	Min	0.048	✓			

Measured by: <i>BB</i>	Date: 10/01/02
Audited by: <i>DL</i>	Date: 10/14/10
Prototype Approval: N/A	Date: N/A

Rev	Date	Change	Revised by	Approved
A	08.09.12	New Issue	KJ/DL	<i>DL</i>

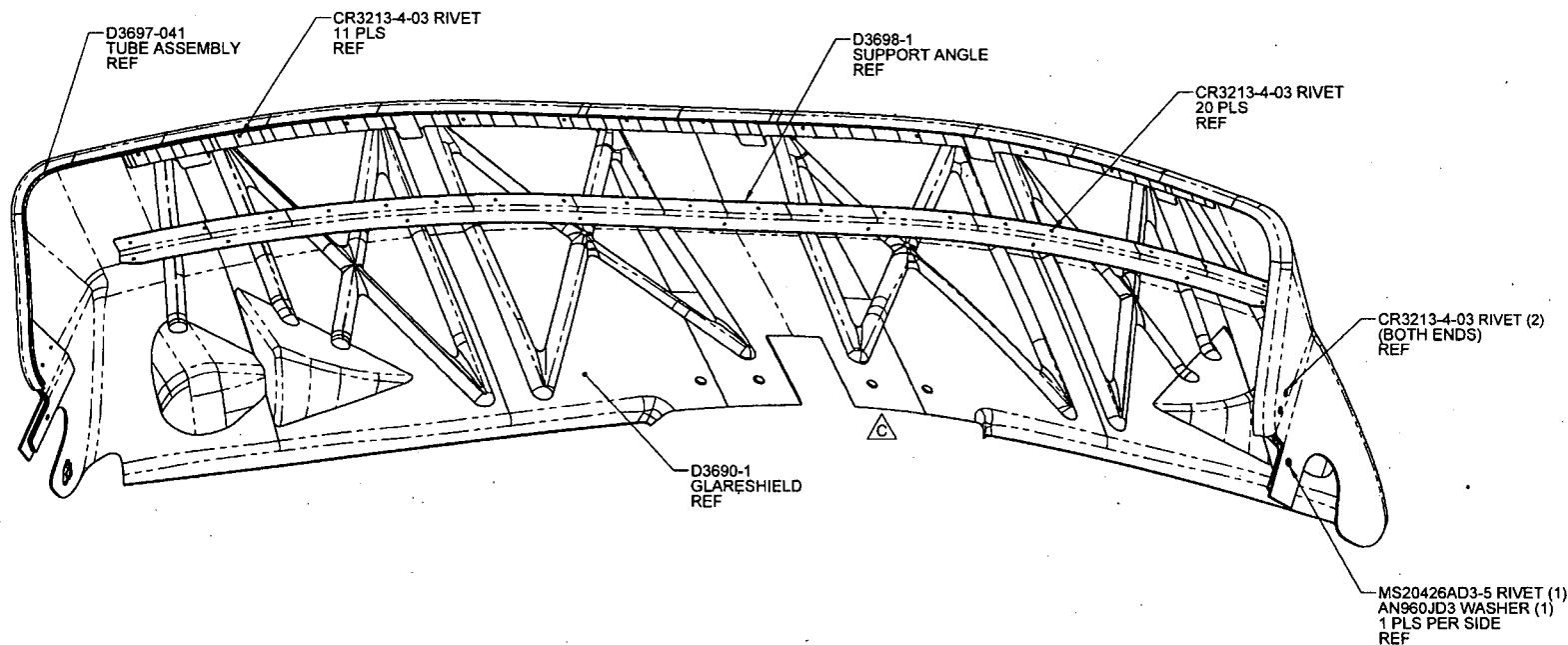
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



# PART LIST

QTY -041	PART NUMBER	DESCRIPTION
X	D3690-041	GLARESHIELD ASSEMBLY
1	D3690-1	GLARESHIELD
1	D3697-041	TUBE ASSEMBLY
1	D3698-1	SUPPORT ANGLE
2	AN960JD3	WASHER (OR NAS1149DN332J)
2	MS20426AD3-5	RIVET
35	CR3213-4-03	RIVET

## D3690-041 GLARESHIELD ASSEMBLY

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE

WORK ORDER  
NO. 63373

PL 10-10-28

**RELEASED**  
08-09-10

C	SHEET 1 PL MS20426AD3-5 RIVET WAS MS20426AD3-4, CR3213-4-03 RIVET WAS MS20470AD3-4. WASHER QTY WAS 6 (VIEWS UPDATED ACCORDINGLY). RIVETS ON SHEET 1 CHANGED TO REF QTY. RIVETS ON SHEET 2 CHANGED TO "HARD" CALLOUTS. SHADING REMOVED FROM ALL VIEWS FOR CLARITY.	AJS	08.09.02
B	ADD FINISH COAT & 1.0 TYP. SHEET 2 ZONES A, 8 & C, 5; ADD MIN THICKNESS. SHEET 3 ZONE A, 8	RF	08.08.24
A	NEW ISSUE	RF	08.05.26
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<u>J</u>	DRAWING NO.	REV. C
MFG. APPR.	<u>E</u>	D3690	SHEET 1 OF 3
APPROVED	<u>10</u>	TITLE	SCALE
DE APPR.	<u>10</u>	GLARESHIELD ASSEMBLY	NTS
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W/O:		WORK ORDER CHANGES					
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

8 7 6 5 4 3 2 1

TRANSFER DRILL  $\phi 0.128$   
FROM D3698-1 TO D3690-1  
INSTALL  
CR3213-4-03 RIVET, 20 PL  
RIVET HEAD ON GLARESHIELD  
OUTSIDE SURFACE

D3690-1  
GLARESHIELD  
REF

TRANSFER DRILL  $\phi 0.098$   
FROM D3697-041 TO D3690-1  
INSTALL  
MS20426AD3-5 RIVET  
AN980JD3 WASHER (ON GLARESHIELD  
OUTSIDE SURFACE)  
1 PER SIDE

TRANSFER DRILL  $\phi 0.128$   
FROM D3697-041 TO D3690-1  
INSTALL  
CR3213-4-03 RIVET 2  
BOTH ENDS

0.14  
REF

D3697-041  
TUBE ASSEMBLY  
REF

TRANSFER DRILL  $\phi 0.144$   
AT THIS LOCATION  
FROM D3697-041 TO D3690-1  
(NO HARDWARE INSTALLED)

D3698-1  
SUPPORT ANGLE  
REF

SECTION A-A

EQUAL DIMENSION  
AT BOTH ENDS

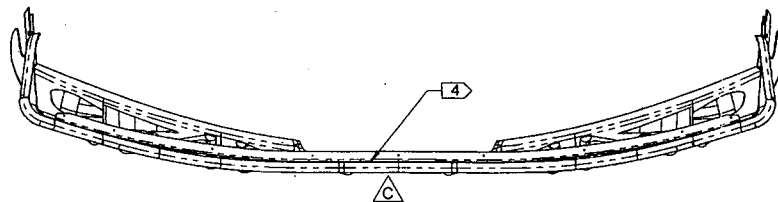
TRANSFER DRILL  $\phi 0.128$   
FROM D3697-041 TO D3690-1  
INSTALL  
CR3213-4-03 RIVET, 11PL  
RIVET HEAD ON GLARESHIELD  
OUTSIDE SURFACE

0.80

1.75  
REF

5.50  
REF, AT  
CENTER LINE

1.0  
TYP



D3690-041 GLARESHIELD ASSEMBLY

wb 63373

RELEASED  
08-09-02

NOTES:

- 1) CENTER D3697-041 AND D3698-1 ON TO D3690-1
- 2) FINISH: PAINT D3690-041 ASSY FLAT BLACK USING BASF GLASURIT 22 LINE CODE SFA39.50 PER DART QSI 005 4.2
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) IDENTIFICATION: ETCH WITH DART P/N D3690-041 & B/N ON INSIDE OF PART
- 5) WEIGHT: 2.98 lbs
- 6) MASK HATCHED AREAS (6 PLS) ON INSIDE OF THE PART PRIOR TO PAINTING

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. C
MFG APPR.		D3690	SHEET 2 OF 3
APPROVED		TITLE	SCALE
DE APPR.		GLARESHIELD ASSEMBLY	NTS
DATE	08.09.02	COPYRIGHT © 2008 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD	

8 7 6 5 4 3 2 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

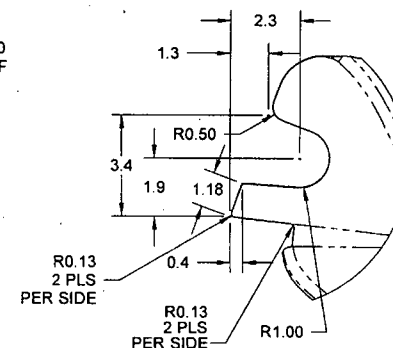
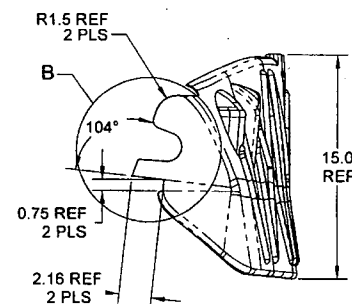
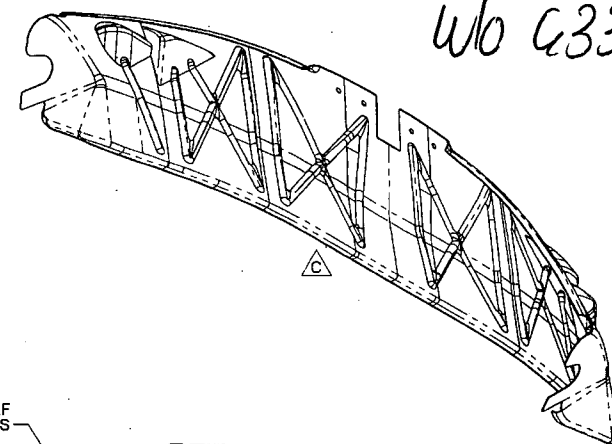
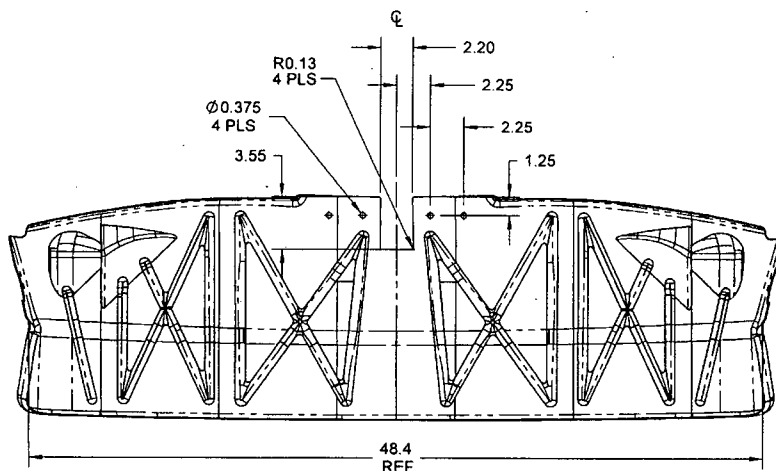
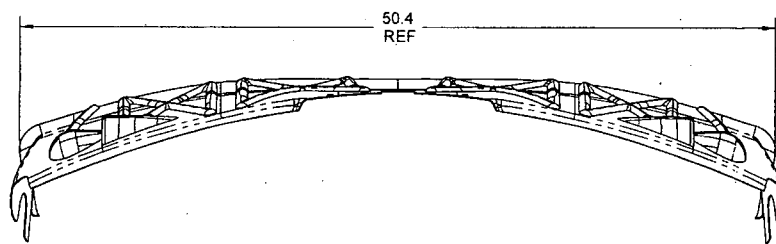
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

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**NOTE:** Date & initial all entries





# **D3690-1 GLARESHIELD**


## **NOTES:**

- 1) MATERIAL: F6006 SUEDE/POLISHED 701 BLACK FLAT LEXAN SHEET 0.093 THICK  
(REF DART SPEC MLEXS 093-F6006-02)
- 2) TOOLING: THERMOFORM PER MOLD DT9010 PER QSI 022  
TRIM PER MOLD SCRIBE LINES EXCEPT WHERE NOTED
- 3) FINISH: NONE
- 4) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 5) UNITS: INCHES UNLESS OTHERWISE NOTED
- 6) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 7) IDENTIFICATION: NONE
- 8) WEIGHT: 2.5 lbs
- 9) MINIMUM THICKNESS AFTER FORMING IS 0.040

**RELEASED**  
04-01-14

## **DETAIL B** SCALE 2X

THIS VIEW FOR REFERENCE ONLY

DESIGN	RF	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. C
MFG APPR.		<b>D3690</b>	SHEET 3 OF 3
APPROVED		TITLE	SCALE
DE APPR.		<b>GLARESHIELD ASSEMBLY</b>	NTS
DATE	08.09.02	COPYRIGHT © 2008 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

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**NOTE:** Date & initial all entries